WHAT IS CLAIMED IS:

1. A multi-hop data communication network having RF capability comprising:

a plurality of terminal nodes; and

a plurality of bridging nodes which dynamically create and revise communication pathways between any two nodes in the network, each of the bridging nodes independently storing and maintaining local information that specifies how communication traffic should flow through that bridging node, and the plurality of bridging nodes, together, providing a complete specification for the communication pathways in the multi-hop communication network; and

said nodes using HELLO messages with a backward learning technique independently create and maintain locally stored information to specify how communication traffic should flow through that bridging node.

2. The multi-hop data communication system of claim 1 further comprising means for offsetting the time period between HELLO message broadcasts.

3. The multi-hop data communication system of claim 2 further comprising means for calculating the time period between HELLO message broadcasts to be received.

4. The multi-hop data communication system of claim 3 wherein said means for offsetting further comprising a first pseudo-random number generator for generating an offset.

5. The multi-hop data communication system of claim 4 wherein said means for calculating further

comprising a second pseudo-random number generator used for computing the offset.

6. The multi-hop data communication system of claim 5 further comprising means for passing a seed value between said means for offsetting and said means for calculating so as to synchronize said first and second pseudo-random number generators.

7. A multi-hop data communication system having RF capability comprising:

a plurality of terminal nodes;

a plurality of bridging nodes; and

said bridging nodes further comprising, means for maintaining communication pathways between any two nodes in the network by repeatedly broadcasting messages identifying itself, means for determining the timing between the identifying message broadcasts.

8. The multi-hop data communication system of claim 7 wherein said terminal nodes further comprising means for calculating the time period between HELLO message broadcasts to be received.

9. The multi-hop data communication system of claim 8 wherein the means for determining the timing and the means for calculating the time both further comprise pseudo-random number generator using a common seed value.

10. The multi-hop data communication system of claim 9 further comprising means for passing a seed value between said means for determining the timing and the means for calculating the time.

11. In a multi-hop data communication network having a plurality of bridging nodes and RF communication capability, a plurality of terminal nodes comprising:

a RF transceiver;

means for segmenting digitally encoded data to be transferred into discrete data packets;

means responsive to said segmenting means for individually transmitting each discrete data packet; and

means for reconstructing discrete data packets into digitally encoded data.

12. The multi-hop data communication network of claim 11 wherein said terminal nodes further comprise means for digitally encoding voice signals, and means for generating audio signals from digitally encoded voice signals.

13. The multi-hop data communication network of claim 11 wherein the length of said discrete data packets are chosen based on correlation distance.

14. The multi-hop data communication network of claim 12 wherein the length of said discrete data packets are chosen based on correlation distance.

15. A communication network comprising:

a plurality of terminal nodes;

a plurality of bridging nodes which, together, form a spanning tree that specifies wireless communication pathways for relaying messages between said plurality of terminal nodes;

one of said plurality of terminal nodes selectively enters or exits a sleep mode through direct, wireless communication with one of said plurality of bridging nodes;

the one of said plurality of bridging nodes attempts to forward messages to the one of said plurality of terminal nodes when the one of said plurality of terminal nodes is not in the sleep mode;

the one of said plurality of bridging nodes stores messages destined for the one of said plurality of terminal nodes when the one of said plurality of terminal nodes is in the sleep mode; and

the one of said plurality of bridging nodes forwards stored messages to the one of said plurality of terminal nodes operating in the sleep mode upon request from the one of said plurality of terminal nodes.

16. The communication network of claim 15 further comprising means within the one of said plurality of bridging nodes for determining whether the one of said plurality of terminal nodes has been disconnected from the network.

17. The communication network of claim 16 wherein the determining means considers whether the one of said plurality of terminal nodes is in the sleep mode in making a determination of disconnection.

18. The communication network of claim 15 wherein the one of said plurality of terminal nodes comprises a receiver, and the one of said plurality of terminal nodes, when in the sleep mode, enters a power saving state that disables the receiver.

19. The communication network of claim 18 wherein the power saving state is entered for a period of time after which the one of said plurality of terminal nodes reactivates the receiver to receive communication from the one of said plurality of bridging nodes.

20. The communication network of claim 19 wherein the period of time is of such length as to permit the one of said plurality of terminal nodes to maintain time synchronization with communications from the one of said plurality of bridging nodes.

21. A wireless communication network comprising:

a plurality of terminal nodes;

a plurality of bridging nodes which, together, form a spanning tree that specifies wireless communication pathways for forwarding messages between said plurality of terminal nodes;

each of said plurality of terminals selectively enters or exits a sleep mode through communication with at least one of said plurality of bridging nodes; and

said plurality of bridging nodes forward messages to those of said plurality of terminal nodes that are in the sleep mode only upon request, and immediately attempt to forward messages to those of said plurality of terminal nodes that are not in the sleep mode.

22. The communication network of claim 21 further comprising means within said plurality of bridging nodes for determining whether any of said plurality of terminal nodes has been disconnected from the network.

23. The communication network of claim 22 wherein the determining means considers whether said plurality of terminal nodes are in the sleep mode in making a determination of disconnection.

24. The communication network of claim 21 wherein each of said plurality of terminal nodes comprises a receiver, and each of said plurality of terminal nodes, when in the sleep mode, enters a power saving state that disables the receiver.

25. The communication network of claim 24 wherein the power saving state is entered for a period of time after which each of said plurality of terminal nodes reactivates the receiver to receive communications from said plurality of bridging nodes.

26. The communication network of claim 25 wherein the period of time is of such length as to permit said plurality of terminal nodes to maintain time synchronization with communications from said plurality of bridging nodes.

27. A communication network supporting wireless communication throughout an area comprising:

a plurality of roaming terminal nodes;

a plurality of bridging nodes which, together, form wireless communication pathways for relaying messages between said roaming terminal nodes;

each of the plurality of bridging nodes transmits at predetermined intervals hello messages that indicated the presence of pending messages; and

each of the plurality of roaming terminal nodes comprising a controller and a wireless receiver, wherein the controller synchronizes use of the wireless receiver at the predetermined intervals to receive the hello messages transmissions.

28. The communication network of claim 27 wherein the plurality of roaming terminal nodes operate under limited battery power in a low power consumption state by disabling the wireless receiver; and each of the plurality of roaming terminal nodes enables the wireless receiver at the predetermined intervals to receive hello message transmissions.

29. The communication network of claim 28 wherein the plurality of roaming terminal nodes leave the lower power consumption state to receive pending messages.